CMPM 163 S2019
Game Graphics & Real-time Rendering

Final Group Project (100 pts)

- Group presentations for work in progress, 6/4 in class (15 pts)
- Final Deliverables, due Friday, 6/14 at 12noon (85 pts)

You will work together with between 2 and 4 of your classmates (i.e., teams of 3, 4, or 5) to design a 3D scene that incorporates a range of different effects that build off the concepts you've been introduced to in this class.

Each student will be responsible for implementing one effect, or, if it is a more complex effect, then each student will make it clear which part of the effect they worked on.

Some ideas for techniques to work on:

— Indirect illumination
— Ambient occlusion
— Caustics
— Cloud simulations
— Crepuscular rays
— Bidirectional reflectance distribution functions
— Subsurface scattering
— Volume rendering

You also might be inspired by other real-world phenomena or objects: Stained glass, gems, smoke, plasma, rust, lightning, raindrops, mirrors, snowflakes, frost, etc., or by video game effects, portals, explosions, spells, lasers, etc. Please contact me or the TAs on Slack if you have any questions about an appropriate topic.

Part A: In-class presentation (15 pts)

Your group will be chosen in random order to present on Tuesday 6/4.

- Your presentation will be no more than *5* minutes in duration. This is not very much time! Please prepare slides as a group and test before Tuesday's class. You will submit your slides to a Google Drive page. You can embed videos in the slides, but we won't have time, for example, for you to run Unity project live.

- The slides will provide an overview of what you are intending to create for the final project. If you already have some results, you can show those. Otherwise, or in addition, you will show examples of the effect you are planning to recreate that are drawn from screen captures, technical papers, book chapters, blog postings, movie stills, sketches, etc. You will make it clear what each member of your group is working on, as well as how you plan to integrate the various efforts of the team members into a final project.

- You will turn in your slide presentation as part of the final deliverable for 6/14.

Part B: Final deliverable (85 pts)

The final deliverable is due no later than 6/14 at 12noon. This deliverable will be in the form of a link to the git repo for the final project, consisting of the following:

1. A "readme" file that lists all team members and their role in the project, along with instructions for running/navigating the project.

2. A link to a final project that runs in the browser or from a downloadable executable.

3. Code for the final project.

   - You can optionally include separate code for each of the effects (or links to other repos that do this), but you also need to include the final integrated code that runs the integrated project.

4. Highlight video of the final project.

   - Include a short video (~1 or 2 minutes long) showing off your favorite parts of the project.

5. The initial work-in-progress slide presentation from week 10 of class.

   - You are welcome to add some additional details to this slide (i.e., it can expand on the ideas which you originally presented in class).

6. Documentation in the style of a SIGGRAPH poster paper or short paper.

   - You will write up your results using the SIGGRAPH "ACM Standard" Proceedings template, which can be found at https://www.acm.org/publications/proceedings-template. You should use this .doc file as a template if you are using Word: https://www.acm.org/binaries/content/assets/publications/word_style/interim-template-style/interim-layout-.docx
   Or this LaTeX template if you are using LaTeX: "sample-sigconf.tex" from this zip file:
   https://www.acm.org/binaries/content/assets/publications/consolidated-tex-template/acmart-master.zip

   - Your paper should explain the technical challenges and creative vision of the project, and include enough detail, both in text and with figures and images, for someone with shader programming skills to recreate the projects. There is no mandatory length requirement for the paper, somewhere between 2 and 6 pages is probably sufficient. You won't need to reproduce the code itself in the paper, but pseudocode / algorithm / implementation details could be useful. If you have any questions, feel welcome to send a draft to me and the TAs the week before the deadline.

Grading is per individual, not per team. For example, if one member's effect is executed and described with great success, that team member will still get a good grade even if the other team members don't do as thorough a job. On the other hand, a team member who creates an interesting effect still needs to take some time to work with the rest of the team to integrate it into the group project.